ABSTRACT OF THE DISCLOSURE

An ECG-prep scan is used to set an optimum time phase in both systole and diastole of the heart. At each of the different time phases, an imaging scan is started to acquire a plurality of sets of echo data. An artery/vein visually separated blood flow image is produced from the echo data. The imaging scan uses a half-Fourier technique, for example. This provides high-quality blood flow images with shorter scan time, without injecting a contrast medium. Additionally, with a readout gradient pulse applied substantially parallel with a direction of slowly flowing blood, a scan is performed in synchronism with an optimally determined cardiac time phase. The readout gradient pulse has a dephasing pulse for enhancing differences in a flow void effect depending on blood flow velocities. This enables slow-speed flows, such as blood flows in the inferior limb, to be depicted without fail.